FOREIGN MISCELLANY.

ENGLAND AND THE BOURBON MOVEMENT.

WHY THE ENGLISH PRESS PLACED ITSELF ON THE SIDE OF THE REPUBLIC—DESIRE FOR PEACE ON THE CONTINENT.

[FROM THE REGULAR CORRESPONDENT OF THE TRIBUNE.]

LONDON, Nov. 1.—Now that the intrigue for a Bourbon Restoration in France has failed, an acknowledgment is due to a portion of the English press for its steady opposition to that most discreditable enterprise. It is something new to find England ranging itself on the side of a Republic against a Monarchy. Of English opinion in general I do not think that can be affirmed, and because it cannot the credit due to the press is the greater. What has surprised everybody, and delighted some, is the attitude of *The Times*. From the day when the scheme to put the Count de Chambord on the throne came to light, down to the day when it collapsed, *The Times* has opposed it. There was just one day—the first—when it hesitated, and seemed inclined to give the Royalists some sort of support, or to remain neutral. But the next morning it took a decided stand in opposition. It was not content with mere discontent. It waged unremitting war on the conspiracy. Morning after morning it thundered against the Restoration. Not a single day was suffered to pass without a leading article on French politics. There was no violence. The articles were as moderate in tone as they were able, and gained in force by their moderation of statement; gained in England and perhaps even in France, where moderation is not the rule in journalism, as it is here. There can be no doubt that the influence of these articles in France was very considerable. Rightly or wrongly, *The Times* is still believed to speak for England, and the vigor with which it resisted the pretensions of the Royalist faction convinced French politicians that English public opinion was against a Bourbon usurpation.

Whether the English Government took any steps to let its views be known, or whether it had any views, I cannot say. Foreign politics have never been its strong point. The probabilities are that it stood absolutely neutral. If Mr. Gladstone or Lord Granville had any sympathies, they would take pains to conceal them rather than express them. Their Embassador at Paris, Lord Lyons, certainly is not the man to assume an initiative when his chiefs were for keeping quiet, nor have I heard any rumors that the well-known hotel in the Faubourg St. Honoré was suspected of being a Bourbon headquarters. The prudence, or timidity, or indifference, or whatever you choose to call it, which reigned in Downing-st., left *The Times* master of the situation. Its voice was never more important, never clearer, and never, I rejoice to say, more firmly on the right side. Its adroitness has been not less remarkable. Anything like dictation would have been resented by a people so susceptible as the French. Even the Republicans would have repelled an ally who came in the guise of a mentor. *The Times* was careful to base its opposition on a single principle—the right of France to decide on her own form of government—and it denounced the Fusionists because they strove to deny her that right. It declared yesterday, that "if, indeed, France had appeared really to desire a return to her old allegiance, and if there had been any prospect of her finding, under its flag, peace, prosperity and happiness, we should have welcomed the restoration of the Count de Chambord without reserve. We only wished France to please herself, but we wished to be sure that she was really pleasing herself, and that a fraction of the nation was not speaking in her name."

Those words are not altogether pleasing to a Republican ear, whether French or American, but in them lies the secret of the effectiveness of the support which *The Times* gave the Republic. No Republican journal could have wielded much influence. There is hardly such a thing as a Republican journal in England. *The Times* never pretended to prefer a republican form of government, theoretically. In supporting it, or in opposing a monarchy of any sort against the known alternative of a republic, it went far in advance of the public opinion which it usually submits to—which it seeks to express far more often than to lead. Republican or not, we owe it thanks for this clear-sighted and courageous act. It has fought our battle. Its policy I believe to be due to a conviction of the folly of attempting again to impose on France a government to which the people were irreconcilably hostile, and the certainty of a speedy and bloody revolution. What *The Times* wants is peace in Europe, stability of old institutions and the existing order of society, if possible, but peace above all, and that settled tranquillity which is, on the whole, most favorable to English trade. It has, at present, little apprehension of the spread of Republican, or what is worse, Socialistic and Communistic principles to England. The Paris Commune of 1871 put all those movements back for half a century. Neither this nor the next generation of Englishmen will knowingly take a step on the path lighted by the flames of the Tuileries, or leading to the abyss in which Spain is weltering. Nor has it ever been the characteristic of the English to suffer great distress because their neighbor's house might be burning. They are sure the flames won't cross the Channel. I believe most thoughtful Liberals in England would prefer the conservative Republic to a clerical monarchy. They are Protestants above all things, and the dread of Papal influence is almost as strong as when they excluded Catholics from the succession. What they really would have preferred was, no doubt, a constitutional Orleans monarchy; but as the constitutional Orleans monarchy chose to commit suicide, the next best thing is the Republic of M. Thiers. The belief in Thiers's immortality is very nearly universal.

G. W. S.

CHURCH AND STATE IN SWITZERLAND.

ELECTION FOR PASTORS BY THE ROMAN CATHOLICS OF GENEVA—ABSTENTION OF THE ULTRAMONTANES—ORIGIN OF THE LAW FOR THE ORGANIZATION OF CATHOLIC WORSHIP.

[FROM AN OCCASIONAL CORRESPONDENT OF THE TRIBUNE.]

GENEVA, Oct. 12.—To-day is a memorable day in the extraordinary ecclesiastical history of this little Republic, being the day for the election of pastors by the Roman Catholic voters of the city under the new "law for the organization of Catholic worship." The polls were opened, for Catholic voters only, at 9 a. m., and closed at 4 p. m., and we are now waiting for the returns. There is no doubt on any side as to the result. The Ultramontanes have been adjured in the most solemn manner by their leaders, both spiritual and political, to abstain from voting under pain of excommunication. Under the Swiss usage, which requires the names of candidates to be recorded in advance, only one ticket for the three curacies of the city has been presented bearing the names of the Abbé Chavard, Canon Hurtault, and (with his tardy and reluctant consent) Father Hyacinthe. I have seen what I could of the affair. I went first, at 9 o'clock, to the great hall in the Old College where the "Liberal Catholics" have hitherto met for worship. It is a grotesque room, surrounded by vacant shelves (it was once the library of John Calvin), from which the books have been carried to the elegant library hall of the new Academy; the heavy dark-brown beams of the low ceiling are propped by columns, above the capitals of which wicked-looking sphinxes, with protuberant bosoms, leer and grin at the worshipers below. It can be packed with nearly a thousand people, and notwithstanding the distractions of the day, and the fact that Hyacinthe was not to preach, it was nearly full. A few yards of white cotton cloth had been tacked up at the further end for a canopy, under which was a plain altar, with crucifix and candles, and near by was a reed-organ. The officiating priest, in the usual sacerdotal garments, said the Mass in the French language, in a clear, intelligible voice, while the other priests, in plain ordinary attire, together with the altar boys and other lay assistants, responded also in French. Excepting the translation of the office of the Mass into French, and the saying of it aloud, instead of in an unintelligible stage-whisper, as usual in Roman Catholic churches, the service is unchanged from the ordinary Latin ritual. Father Hyacinthe is busy perfecting the translation of the liturgy, hoping to have the necessary parts of it printed and in the hands of the people this week, for next Sunday is to be a high day for the Liberal Catholics of Geneva. If all goes well at this election, they hope then to be in possession of one at least of the parish churches of the city, and to celebrate their Mass with the voices of the great congregation in a language understood by the people.

From the Old Library, without waiting for the sermon, I pushed on to the Electoral Building. Here, as on all permissible dead walls of the city, were posters exhorting the Catholic voters to their duty—a green one and a yellow one—assuring them that they had been crushed and outraged, and their liberties taken away from them, by the law authorizing them to choose their own pastors, and that their only recourse under this oppression was a dignified and contemptuous (in large capitals) "abstention;" and two scarlet ones, summoning them to rally at the polls. Beside these was a smaller one, in crimson, containing the spirited letter of the Abbé Marchal, a highly respectable and able priest, to his late ordinary, the Bishop of Nancy, resigning his benefices in that diocese and announcing his adhesion to the Liberal Catholic Church of Geneva. Of course, under these circumstances, things were pretty dull and peaceable at the polls. I made haste to High Mass at Notre Dame, the fine church built by Mermillod, the exiled bishop, with a view to its being his cathedral church when he should have carried his point of making himself Bishop of Geneva. There was a large congregation present, hardly less than that at the Old Library, and in the circumstances it could not but be a pretty serious one. Nothing but a miracle stood between them and speedy ejection from their churches. But it was a beautiful exhibition of faith when a young priest ascended the pulpit and began to read a list of appointments for the various city churches for the week and for the next Sunday. He then read off in a high monotone a paper which had already been distributed in print at the door—the "Public Declaration and Profession of Faith of all the members of the Catholic clergy of the Canton of Geneva." The declaration is a sharp protest against the new law as schismatic, the work of a Protestant majority, accepted only by those who are Protestants in disguise; that no Catholic clergyman can have anything to do with it, whether by taking the oath or by election, active or passive; and that any one who would consent to be elected under it is "a thief and a robber." To this protest is added the Profession of Faith signed by the chapter of the old diocese of Geneva, in 1793, when they refused to accept the "civil constitution of the clergy" imposed by the French Revolutionary Government, and went with dignity into banishment. It is a sturdy enunciation of high papal doctrine—the supremacy of the Pope over all bishops and priests, so that whatever power these possess by virtue of consecration or ordination can be exercised only by express commission derived from the Pope. Consequently, the only persons having the right to baptize, absolve, marry, shrive and bury Christians, they will stay with their flock and do it—which, by the way, there is now nothing in the world to hinder.

The little sermon that followed on this document was worthy of the text. It expatiated briefly on the rights of the Church; dilated on the heroism of the two priests who had returned from banishment in 1793 to minister to the spiritual wants of the faithful and had suffered martyrdom in consequence; and asseverated the readiness of their successors to follow their example—a declaration which was no doubt sincere, but which lost much, in point of impressiveness, from the fact that there is not the ghost of a danger of their being called to act up to it. Finally, the preacher wound up with two points of exhortation: 1. That his hearers should take care to have no kind of fellowship with any of the heretics or schismatics, but look upon them all "with horror" as "the children of the Devil." 2. That they should continue instant in prayer.

The whole trouble arose out of the Mermillod affair. That clergyman having finally provoked the Government into withdrawing his authorization as curé, was at last, by a pretty high-handed procedure, banished from the canton. The Government, with sundry Catholic parishes vacant, resolved to leave the whole matter of the nomination of pastors to the Catholic citizens themselves, as is done in the case of the Protestants. The bill introduced for this purpose was scrupulously amended according to the suggestion of the Catholic deputies. Everything which would have been a hinderance to the free voting of a conscientious Ultramontane was expunged. The authority of the bishop was recognized. The full liberty of those who were discontented with the new regime to withdraw and maintain churches of their own was provided for. And nothing remained but to submit the question to votes of the faithful, and let them manifest their loyalty to their priests by a solid vote for their reelection. Just here, however, arose the great difficulty. Up to this point, the whole affair had been simply a political one. In ordinary times, the Church and the State would have wrangled through it and come out at some sort of *modus vivendi* at the end. But the Church has been, this time, unlucky in the time of picking its quarrel. Upon the general religious indifference of the thinking men of Catholic christendom—so confessed and deplored by the best Catholic writers—had supervened the deep discontent arising from the alliance, sealed in the Vatican Council, between the Church and despotism, and "reaction" generally; and then, under the fervid eloquence of Hyacinthe, stirring all hearts in Geneva, had grown up a positive and earnest religious organization, which holds the sympathy, as to-day's election proves, of more than one-half of the Catholic voters of the city. All that the Canton of Geneva has said is that when the Catholic community divides, the Church property and privileges shall go with the major part, and not with the minority.

As I am about to close the letter the result of the voting is announced: Hyacinthe and his friends, 1,256; scattering, 5. Henceforth, then, the Liberal Catholics are before the law; the Catholic Church of Geneva and the Ultramontanes are a voluntary association of dissenters.

THE DISPLAY AT THE VIENNA EXHIBITION.

THE IRON PRODUCTS OF FRANCE—EXPERIMENTS AT THE CREUSOT WORKS—EXTENT OF THE SWEDISH COLLECTION—MERITS OF HOT BLAST STOVES—AMERICAN SKILL REPRESENTED.

Third and concluding part of a Special Report on the Iron and Steel Department, prepared for THE TRIBUNE by Prof. William P. Blake.

VIENNA, Oct. 15.—Schneider's exhibition of the products of the Creusot works, in the French collection, is one of the most perfect and ornate in the whole exhibition. The ores from Algeria, Elba, and France, with the coals, coke, fluxes, and the direct products, are systematically shown. Then follow polished sections of all the forms of bar and angle iron, with samples of each bent and broken to show the quality. There is a similar series of steel products, including sections of all the forms of rails made for various railways. The numerous specimens of great tenacity are particularly interesting. They comprise steel bars, three or four inches square, bent double; polished railway axles folded back one end upon the other, and the journals bent at right angles, without in either case showing a crack or a flaw. This establishment is being rapidly extended in size, and when the additions now in progress are completed, will cover 171 acres. The annual production of pig iron is 180,000 tons; of wrought iron 90,000, and of steel 60,000 tons; number of workmen, 15,500. Experiments are being made to test the strength of the different brands of iron and of steel sold in commerce. Thousands of samples have been carefully tested and the results recorded. A classification based upon these results is proposed, which is said to have received the sanction of the trade. Seven degrees or classes of iron ore are recognized, and the physical properties of each class are tabulated. For steel, three classes are proposed, and these classes are to be designated by the letters A, B, C. A is to represent the ordinary grades; C, the superior; and B, the intermediate qualities.

THE SWEDISH IRON INDUSTRY.

The Swedish contribution is characterized by the number and excellence of the specimens of ores in large square blocks, which form a very appropriate foundation for tastefully arranged pyramids of bar iron and steel. It is the best collection of magnetic and specular ores in the exhibition, and was made at the cost of the Swedish Iron Association by Prof. Akerman, author of an interesting brochure upon the production of iron in that country. Bessemer steel and Martin's steel, in ingots and bars, are also prominent objects in the collection. Here, too, is found a very complete series of samples of the celebrated Dannemora steel, and specimens illustrating each stage in the manufacture of steel from granulated pig-iron, powdered ore, and powdered coal. There is an extensive display also of spiegel from Schisshyttan, containing from 16 to 20 per cent of manganese. The production of iron ores in Sweden in the year 1871 reached 662,388 tons; of bar iron, 167,000 tons; of Bessemer steel, 5,000 tons. The production has been steadily increasing, and will be much greater for the year 1873.

NOVELTIES IN THE BRITISH DEPARTMENT.

The heaviest exhibition in the British section is made by the firm of Cammell & Co. of Sheffield, which sends cast-steel propeller blades, rails, wheels, axles, and armor plates. The firm of John Brown & Co., which sent such massive iron plates to the Paris Exposition in 1867, is content this year with making a very full display of railway material and two small armor plates showing the effects of round shot and of pointed shot. The large plate sent by Cammell & Co. is 20 feet long by seven feet wide and ten inches thick, and is intended for the German turret-ship Borussia.

The Bowling Iron Company exhibits iron and steel boiler plates, steel castings, and railway material. Steel tires for railway wheels are shown bent while cold into various forms without breaking. Thomas Firth & Son exhibit steel ingots, a homogeneous steel core for a 35-ton gun, and forgings of the same metal for artillery and rifle barrels. The Landore Siemens Steel Company send samples of their steel rail and tires, and of the steel barrels for the Martini-Henry rifle. In the exhibition made by Johnson & Nephew, Manchester, there is a weldless wire rod, 1,770 yards long.

There are several other contributions of considerable interest, but the most important in a metallurgical point of view are the exhibitions made by Thos. Whitwell of his hot-blast stoves, and by C. William Siemens of a new process for the production of iron or steel. The patent fire-brick stoves of Mr. Whitwell are intended to heat the blast of iron furnaces. The invention is represented by a very perfect model, accompanied by a full series of drawings, and, what is better, by an intelligent agent to explain it. The stoves are designed to replace the ordinary iron pipes used for treating the blast, substituting for them a series of fire-brick chambers and passages which are heated by the direct contact of the flames of the burning gases taken from the furnace in the usual way. When the mass of brick is sufficiently heated the gas is shut off and the blast is admitted. This in passing through the same heated chambers acquires the temperature of the bricks. The brick work of course gradually cools down, but by the time the last chamber begins to be too cool, another stove has been heated up and the blast is made to pass through that. The stoves are thus alternately heated by the burning gas and cooled by the blast. The advantages of this system are numerous. One of the greatest is uniformity of temperature of blast, which cannot be counted upon with iron pipes. The bricks are a great storehouse of heat, and cool gradually. Iron pipes cool suddenly when from any cause the supply of burning gas is stopped. The air being brought into direct contact with the surfaces previously heated by the gas, absorbs the heat quickly and with little loss. The apparatus is simple, is easily erected, and is being extensively introduced. For cupola furnaces, making 600 tons a week, two stoves, 12 feet square by 21 feet high, and with 2,270 superficial square feet of heating surface in each, are necessary.

Dr. C. William Siemens of London illustrates his newly-proposed method of producing iron and steel directly from the ore, by models of the furnaces and apparatus with specimens of the products and of the materials employed. The chemistry of iron metallurgy is indebted to Dr. Siemens for many valuable contributions, not the least of which is his lecture before the Chemical Society, in March last, upon smelting iron and steel. In that lecture he gave in considerable detail the course and results of the experiments which finally led him to adopt the direct process. Briefly stated, this process consists in smelting successive charges of ore in a rotary puddling furnace. A charge of about twenty hundred weight of crushed ore, mixed with the proper fluxing material, is placed in the rotating puddler. When, by the flame from a regenerative furnace, it has been brought to a red heat, from 5 to 6 cwt. of small coal is added and the speed of the puddler is increased. The reduction of the ore to the metallic state proceeds rapidly; the carbonic oxide evolved is burned within the chamber and very little gas from the gas producers is required. When the reduction is complete the puddler is stopped, and the fluid slag is drawn off. The puddler is then rotated rapidly, the iron is collected into two or three metallic balls, which are withdrawn and treated in the usual way. About two hours are required for a charge, and assuming that 1,000 pounds of iron are got out to each charge, the furnace would produce about five tons of puddled bar per diem. It is claimed to be feasible to push the operation so far within the rotator as to produce cast-steel. Mr. Siemens claims and undertakes to demonstrate that by this process a very great saving of fuel is effected. For the lining of the rotatory puddler, after numerous trials, he has found a mixture of calcined Bauxite powder with clay and plumbago to be the best. Three per cent of clay and six per cent of plumbago give the best results as binding materials. Bauxite is a ferruginous clay, containing from one to four per cent of silica. The graphite under the intense heat reduces the oxide of iron in the Bauxite to the metallic state. Linings so made have been found to be very durable, far more so than the best fire-brick.

THE MERITS AND DEFECTS OF THE AMERICAN COLLECTION.

In speaking of the American display, it is proper to notice the rotatory puddler exhibited by Mr. Sellers of Philadelphia before mentioning the extent of the national exhibition of iron ores and products. Sellers's puddler has from the first attracted great attention. The novelty of its form, the single opening in front, its compactness and finish, and the ease with which it is manipulated, all commend it to iron men. It is flask-shaped. The flame passes in, circulates and passes out again at the same end by which it entered on the opposite side of a horizontal partition which divides the opening. All the other rotatory puddlers have openings at the opposite ends, one of which is closed by a sliding door, and is used for charging and discharging. This puddler is so placed upon a frame that it can be swung away from the furnace to permit of charging from the front. The parts most exposed to the heat are protected on the outside by water-jackets. The charges for this puddler are to be melted in an auxiliary furnace, saving not only the lining of the puddler but time and fuel.

A set of high rolls from the same establishment also deserves special mention. By a simple hydraulic arrangement these rolls can be set instantly at any required distance apart. A man at one point, by a lever, controls the movement. Perfect parallelism is maintained and, in case of clogging, the rolls can be separated without accident.

Of iron ores there is a very respectable exhibition, though the collections are by no means as large and complete as they should be to represent the country. A fine series of the Lake Superior ores is supplied in good-sized blocks by Mr. Tuttle of Cleveland. The magnetic ores of Essex County, New York, are represented by specimens contributed by Messrs. Witherbee and Sherman, and by a series of well-selected samples of the ores, the flux, the pig-metal, and blooms collected by Prof. Silliman at the mines of the Clifton Company, and forwarded by Mr. C. S. Johnston, of New York. The only ores from Pennsylvania are those sent by the Dunbar Iron Works, a very neatly arranged collection, and some specimens forwarded by Prof. McCoy of Philadelphia. Indiana, through the exertions of Prof. Cox, the State Geologist, has a fine display of the block coal, iron ore and pig-iron from the southern part of the State. There are also ores from Alabama and North Carolina. The heaviest collection comes from Tennessee. Col. Wilder brought with him, after the exhibition had fairly opened, a series of massive blocks of iron ore and of coal, together with pig-iron, sections of rails, and some large blooms. This collection, although it arrived very late, was honored by a medal. There does not appear to be a specimen of Bessemer or Martens steel from the United States, and a stranger to our industries, judging of the country by the exhibition, would infer that these advanced processes are not yet introduced. Fortunately, Messrs. Park & Brother of Pittsburgh have sent a few good samples of cast-steel and a very fine specimen of hot flanging for a boiler-head, which attracted the attention of the jury and received a medal. The merits of the collections from Northern New-York, from Alabama, Indiana, and Michigan were similarly recognized.

THE SAN FRANCISCO SCHOOL OF DESIGN.

On the 10th of December the Art Association of San Francisco is to open its Annual Exhibition, and on that occasion will be shown to the public the collection of casts from the antique marbles in the Louvre which have been presented to the Association by the French Government. As is well known, there is in the crypts of the Louvre an establishment dating back a considerable number of years, for the taking of casts of all the marbles constituting the priceless collection of the Louvre. The first object of this establishment, which is supported by the Government, is to supply the schools and museums of the towns and cities of France with copies of the great works in sculpture, and to keep for artists and their pupils a supply of the best models. These casts are also sold at low prices to the general public, and the Government frequently presents them to the schools and museums of other countries. The First Napoleon gave a considerable number of pieces to the Academy of Fine Arts of Philadelphia, and there may have been other other gifts of a like value to institutions elsewhere. The Louvre casts have always been distinguished for their accuracy and for the delicacy of their execution; the reductions, too, are managed with great skill—the small casts of the Venus of Milo for instance, three feet high, preserve all the beauty of the colossal original that can be preserved in a cast. It was in what would seem to have been a very inopportune time—in the days of the Commune—that the French Consul at San Francisco applied to his Government for a set of casts of the most famous of the Louvre statues for the San Francisco Art Association. But the request was heard even amid the din of arms, and the answer has just been returned in the generous shape of nineteen packages containing casts of fifty-four pieces of sculpture presented by the Government. There are besides, some fifty other casts of statues, torsos and busts, with a useful selection of feet, hands, arms, and masks to be used as models in the School of Design. All these were purchased for the Association by its accomplished agent, Mr. Mezzara, an Italian sculptor of repute. The Association is now in possession of a most useful collection of casts; in time we hope it will find the means to purchase, and the room to show, casts from the Italian sculpture of the Renaissance, and from the Gothic sculpture of the thirteenth and fourteenth centuries. These are needed in any public collection as offsets to the influence of the classic sculpture, and though in the figures by Michel Angelo on the Medici tombs, and in his Slaves, there is a taste of the Renaissance, yet it is late, and exceptional besides—we refer rather to the works of Luca della Robbia, of the Pisani, of Mino, of Ghiberti, and of Donatello, greatest of all. Italy is full of the most exquisite work in sculpture of which we know little or nothing from museums which go on calling the roll of the Olympian gods and goddesses as if there were no others. The South Kensington Museum is the only one out of Italy that gives us a hint of these beauties; we wish there could be a beginning made in America even in so far-away a part of it as San Francisco. American sculpture wants feeling, wants deep poetic sentiment. It is sometimes learned and scholarly, sometimes rugged and strong, sometimes, and that too often, sickly sentimental. Our young sculptors have not many models of any kind, but what they have are almost wholly drawn from the classic art. While they draw their inspiration from this their work is, for the most part, cold and dead, and takes no real hold upon their time. When they turn their backs upon it, with an honest conviction of its unreality, they do not find that support in our society of forming opinions, fluctuating faith, and crystallizing order which enables them to fall back on simple human nature—they want the help that comes from sympathy with an artist's pursuits and feeling; they want a background against which to build up their life-work that shall not be in staring contrast with it: and until he has made a sympathetic human society of his own by his performance, we believe many a young sculptor would find it in the study and companionship of the early Gothic work, and of that of the early Italians.

WESTERN EXPLORATIONS.

THE "YALE COLLEGE EXPEDITION" OF THIS YEAR.

SOME FEATURES OF LIFE IN A ROUGH COUNTRY—THE MORMONS FIND SUPPORT FOR THEIR FAITH IN SCIENTIFIC DISCOVERY—ANCIENT OUTLETS OF SALT LAKE WHEN IT WAS FRESH—A CASE FOR BERGH—VALUABLE DISCOVERIES OF THE EXPEDITION.

[FROM THE SPECIAL CORRESPONDENT OF THE TRIBUNE.]

NEW-HAVEN, Conn., Nov. 11.—The return of Prof. Marsh and his exploring party from the West is an event of great interest here. The extraordinary character of the discoveries made in Prof. Marsh's expeditions, serving to fill many pages hitherto blank in our knowledge of bygone geological eras, the value of the collections made, which are presented to Yale College, and the wide-spread publicity which has been given to these undertakings and their results by the correspondence of THE TRIBUNE, afford a ready explanation of this general interest. To numerous inquiries respecting the details of the trip the members of the party give but slender replies. It is no part of the programme of these expeditions to hasten into print with crude and ill-digested statements as to the resulting discoveries. Nothing could be more obnoxious to the true scientific investigator than hasty announcements, made without time and opportunity for study, respecting the anatomical forms, the general characteristics, and the appearance when living of the extinct animals whose fossil bones are so recently exhumed. These are cases where it will not answer to rely upon a general knowledge of anatomy and a happy faculty of guessing. Mistakes in such restorations throw odium upon inductive science, and subject the entire class of discovery to which they belong, to doubt, disparagement and ridicule. But upon one point there is little hesitation in answering. "We had a hard time of it," says one member of the party. "It was a rough trip," says another. Prof. Marsh himself expresses more than the usual feeling of relief and thankfulness at his safe return from those wild and desolate regions to the comforts and security of civilization. There is no doubt that in danger and hardship the expedition of this year exceeded its predecessors, and Prof. Marsh thinks it will be the last of the series.

The letter to THE TRIBUNE in June last, which gave a summary of these undertakings to that time, was written when the expedition of this year was just under way. A little incident at the start is so significant of what was to be anticipated on the trip, that it seems worth recording. It may deserve to go down into history with the story of a Scottish chieftain who noticed, while his followers were sleeping on the snow, that one of the younger members of the clan had rolled up a ball of the fleecy material to serve as a pillow. Kicking the snow-ball from under the sleeper's head, the chief addressed him, as he awoke, in coarse and emphatic Gaelic, respecting the demoralizing tendency of such Lowland luxuries as pillows. Before starting, Prof. Marsh had warned his followers against superfluous attire. But when they were assembled in the evening upon the ferry-boat crossing from New-York to Jersey City, he found one of them wearing a high-crowned, fashionable, silk hat. "We may as well begin here," said the Professor. "You can't go out in my party with that hat." Ruefully, but with a firm step, the young man stepped out of the cabin and flung the offending "stove-pipe" over the rail into the dark waters of the Hudson; then, drawing a cap from his pocket and pulling it over his brows, he rejoined the party. Theirs was no holiday journey.

Two interesting letters have been published in THE TRIBUNE describing the progress of this year's expedition. The last of these left the party at Salt Lake City. There they remained several days resting from the extreme fatigues of their trip from Fort Bridger, of which the hardships had been exceptionally severe. Preparations also had to be made to continue the explorations for a month or two longer. At Salt Lake City they met sympathy and encouragement quite surpassing their previous experience during this expedition. In previous years Brigham Young has invariably taken great interest in Prof. Marsh's explorations. Last year a son of Brigham, Mr. John W. Young, offered the party the use of a steamer to assist in exploring along the shores of Salt Lake; and it is but simple justice to state that in all instances the Mormons have tendered every facility in their power toward Prof. Marsh's undertakings. But in the present instance there seemed to be more than the usual display of these attentions. Prof. Marsh called by special appointment upon Brigham Young, and found there assembled to meet him the prominent members of the Mormon Church. It should perhaps be mentioned that this was shortly after the wide publicity given by the press to the scientific discoveries of the Professor, and after they had by such means reached the reading public of Utah. After the conversation opened, Brigham Young bent his inquiries particularly to the subject of fossil horses. His interest in this matter seemed remarkable. He made it a point to ascertain minutely the localities where fossil remains of the horse family were found; he asked particularly as to the facts developed respecting this peculiar group; he wanted exact information respecting the different species, the order of the formations in which they were found, and the peculiar characteristics of the different types. When at length his curiosity on all these points was satisfied, Brigham Young explained its cause. Some years ago, during a public discussion in London upon the merits of the religion of the Saints, the point was raised against the authority of the Book of Mormons as a revelation, that it spoke of horses as existing in America in the prehistoric era in which it describes certain events. It is well known that there were no horses in this country at the time of its discovery, and that the Spaniards were the first to introduce these animals. So it seems that while most theologians are regarding the developments of the natural sciences with fear and trembling, the chiefs of the Mormon religion are prepared to hail the discoveries of palæontology as an aid in establishing their peculiar beliefs. Brigham Young descanted with fervor upon the topic, and declared that upon no other supposition than that the writer of the Book of Mormon was inspired, could he have known when he wrote that there had been horses in America in its earlier ages. And thus Prof. Marsh, one of the warmest advocates of the development theory, is raised to the rank of a defender of the faith.

At Salt Lake the party divided. Their next field of exploration was to be in Oregon. A part of the expedition started with Prof. Marsh to go overland through Idaho; a long, weary, dangerous journey of 700 miles. The route lay through the John Day Valley, the destination being a point on the Columbia River, somewhat to the west of the mouth of the Des Chutes River, which empties into the former stream. On this trip careful examinations secured additional evidence corroborating the observations made by Prof. Marsh on his previous journeys respecting a former northern outlet to Salt Lake. There is no doubt that this lake is the remnant of what was once a vast body of fresh water, comparable with the present great lakes of our continent. The surrounding terraces distinctly indicate these characteristics. In the course of ages, and by the gradual elevation of that region, the outlets of the lake ceased to perform their office. After that, while the sun still raised vapors from the surface of the water and carried them to the adjoining mountain tops, thence to return to the lake, condensed in running streams, there was no longer any escape for the saline particles brought down in solution from the surrounding hills. Each individual torrent brought with it, perhaps, at any one time, but a small quantity of the dissolved salts. But the process, though slow, was continuous as the centuries wore on, till now the bitter waters of the lake are so impregnated with saline material that a man bent upon suicide could with difficulty drown himself in them. The fact that there was once a southern outlet of the lake, emptying into the Colorado River, has long been established. Prof. Marsh is satisfied that there has been also a northern outlet emptying into the Columbia River. The latter outlet was probably more ancient than the former.

The route led over the great basaltic plateau to Shoshone Falls, a cataract of great natural beauty, and in many respects entitled to rank with the finest in America. The party crossed the Blue Mountains, a range in Eastern Oregon. The summit of one of these mountains is a broad meadow of table land, and serves as a station for a stage line. A span of mules and some horses had been feeding in this meadow; the mules were becoming frisky and the stage-owners wanted to use them below. The preparations made by the driver for descending the mountain would have crazed Mr. Bergh. Partly because of the necessities of the case, since a balk or check in rapid descent is certain to upset the vehicle, and partly because the driver was anxious to get down before nightfall, the precautionary measures to keep the team in motion were unusually varied and abundant. First, there was the familiar whip of the Western stage-driver, whose long lash, snapping at the distance of 20 feet, is guaranteed to take a fly off the leader's ear. In this case the mules were the leaders. For the wheel-horses, a more formidable instrument was provided: an iron chain fastened to a short stick did duty as a whip for them. In addition, a load of small stones was carried in the vehicle. Such a ride! Down, down the precipices, 500 feet at a stretch, both whips in active use and the assistant driver pelting the team with stones, while several horses, unattached, accompanied their flying progress, jumping, running, crashing, dashing, over rocks and fallen timber. As they crossed, in an interval that might be considered as a resting spell, a doubtful structure that went by the name of a bridge, the driver mentioned that a few days previously the stage had been stopped there by "road agents." "We had to give up the treasure-box," said the driver. Highway robbery had come to be counted in as part of the chances of a trip. Prof. Marsh heard that the stage was robbed again a few days after his departure. But it does not always happen that the "road agents" have it all their own way. It is related that when the stage stopped, in one instance, a rough passenger demanded the cause of the stoppage. "There's a man ahead holding the horses, and there's another with a double-barreled gun pointed at us," said the driver. Out jumps the passenger with a revolver, shoots the man with the gun, fires at the one ahead, discharges a few shots here and there, and jumping back into the stage, orders the driver to go ahead. As they near the station the other passengers ask the owner of the revolver how much "treasure" he has aboard. "Nary red," he replies; "but I could'nt let such a chance for a fight pass me."

The John Day Valley was the region of the research. The explorations on this ground in 1871 had been remarkably fortunate. Since then it has been visited with good success by Lord Walsingham and his party, who sent the specimens they collected to the Woodwardian Museum at Cambridge, England. The region about the John Day River was carefully explored this year by Prof. Marsh's party. It is a very rough country. In the pliocene formations there were found the remains of horses of various species, and of rhinoceroses and camels; in the miocene were specimens of oreodons and rhinoceroses, of the anchitherium, and of various carnivores. All along the John Day Valley many Indians were met, all very friendly. They had been exceedingly insolent during the early successes of the Modocs, and had in the beginning of the season spread great consternation among the residents in that thinly settled region. But the capture of Capt. Jack and the immediate prospect of his execution had exercised a most wholesome effect upon them. Both before and after the execution the impression produced on the Indians throughout this region was very noticeable; there can be no doubt, on the other hand, that if he had escaped his fate they would have given the settlers much trouble.

A week was spent at the Dalles, on the Columbia River, and then the party proceeded by the river to Portland. They had a narrow escape from shipwreck on the voyage from the latter city to San Francisco. The steamer conveying them, the John L. Stevens, is 22 years old. She was loaded so as to draw considerably more than is the limit allowed her by law, on the supposition that as it was yet early in the season the passage would be a pleasant one. On the second day out a fierce gale from the south-west, unusual for that time of year, was encountered, and for two days the vessel was in the utmost peril. Leaving San Francisco, the party passed through Kansas and made a short exploration among the cretaceous deposits of that State. Thence they returned to New-Haven, arriving after an absence of five months, bronzed and weary, not to say tattered and torn; but with good digestion waiting on appetite.

Some of the collateral fruits of this expedition may here be mentioned. Hitherto, all the freight for Spotted Tail's Agency has been shipped by way of Cheyenne or up the Missouri River. In the course of their explorations the party discovered a much shorter route via the Niobrara River. It was demonstrated that a train of heavy army wagons could travel by this route, leaving the Union Pacific Railroad at North Platte and going directly north-west, avoiding a wide detour. The advantages of such a route in that arid region need not be enlarged upon. Good timber, including oak, grows on the margin of the stream, and since its exploration by Prof. Marsh settlers have been pushing into that part of the country.

But the chief importance attaches to the scientific results. Five tons of specimens are brought back, and are now unpacking in the Museum of Yale College. Among them are many contributions of great value to ethnological research. The expedition as a whole was very successful, and its results will compare favorably with those of previous years. The collections are especially rich in fossil horses and rhinoceroses, and contain a remarkably complete set of remains of the dinocerata, sufficient to clear up every point hitherto doubtful in the structure of those animals. A majority of the specimens have a peculiar value in demonstrating the characteristics of those intermediate forms, which, whether we regard them as detached evidences of a creative power or as the steps of a successive evolution of animal life, are of the highest interest to the student of the earth's history.

THE FARMERS' WAR.

RAILROAD LAND SWINDLES.

BUYERS OF RAILROAD LANDS EVADING TAXATION—THE TAXES UNFAIRLY PLACED UPON HOMESTEADERS—WORKINGS OF THE "TOWN-SITE RINGS."

[FROM THE SPECIAL CORRESPONDENT OF THE TRIBUNE.]

CHICAGO, Oct. 5.—A very serious imposition upon homestead settlers and purchasers of Government lands that have been made accessible by the construction of land-grant railroads has recently been brought to my attention, and, as I have seen no newspaper reference to it recently, a simple statement of facts may be of interest to some of the readers of THE TRIBUNE, and perhaps suggest a reform. As the railroad companies whose lines have been completed, and whose land patents have been secured, generally hold their lands at higher prices than that placed upon the Government lands—$2 50 an acre—the sections belonging to the United States would naturally all be taken up before those belonging to the railroads could be sold at all. But to induce settlers to purchase of the railroads several expedients are resorted to. The stations are generally placed as nearly as possible in the middle of a railroad section, and as the towns are built up around the stations those who wish to live or do business in town must purchase lots of the railroad company or of the "Town-site Ring," which, in many instances, is composed of officers of the company. Where farms are sold a credit of from five to eleven or thirteen years is given to the purchaser, so that the settler can often better afford to pay $5 an acre when he has several years within which to raise the money than to pay $2 50 down. Finally, as the title does not pass from the railroad company until the last payment has been made, and as lands granted to railroads are not taxed until the title has been conveyed to other persons, the settlers on railroad lands who do not pay cash for them are, for the time being, exempt from taxation.

It is this exemption from taxation of which I desire to speak. A gentleman who has recently returned from an excursion over a portion of the Atchison, Topeka, and Santa Fé road told me to-day that at one of the towns he visited he found a county court-house building which is to cost more than $200,000, a very expensive bridge, and other public improvements, which seemed to him exceedingly extravagant for a new town and county. On inquiry he found that these were all paid for by issuing ten-year county bonds. Now that town is situated on a railroad section, and half the land in the county is what is known as railroad land. Town lots and farms are sold by the railroad company on eleven years' credit. Those persons who live in town, or who have purchased farms of the railroad, do not complete their titles until eleven years (one year after the county bonds mature), and in the meantime their real estate is exempt from taxation. They form a majority of the voters in the county, and, therefore, have the power, which they have in this case exercised, of involving the county deeply in debt and imposing upon homestead settlers and those who purchased their lands of the United States very heavy taxes for improvements which the majority of them probably voted against. It is the same old swindle that we have seen in New-York, Washington, and other large cities where non-tax-paying voters pile up debts for other men to pay.

Looking a little further into this subject, I find that this species of injustice is not confined to those portions of the country that are now just being settled. I am informed by a gentleman of this city, who has ample means of knowing, that there are hundreds, if not thousands, of the best farms in Illinois on which not a cent of real estate tax has ever been paid, though they have been improved for nearly 20 years. The land was originally purchased of the Illinois Central Railway Company, and for the purpose of escaping taxation the owners of the land have, through an agreement with the officers of the company, deferred making a final payment. The titles to these farms can be obtained any day if they are wanted, but in the meantime other men who did not buy of the railroad are forced to pay more than their fair share of the taxes. It is unnecessary to say that Congress, in granting these lands to railroads, or to the States, to be afterward given to railroads, never contemplated giving to the settlers upon them any privileges not accorded to homesteaders.

THE GREAT WASHINGTON TELESCOPE

AN INSTRUMENT OF EXTRAORDINARY POWER—INGENIOUS CONTRIVANCES WHICH FACILITATE ITS USE.

[FROM AN OCCASIONAL CORRESPONDENT OF THE TRIBUNE.]

WASHINGTON, Nov. 8.—It is not to be wondered that a stranger, on making his first pilgrimage to the political metropolis of the country, should find himself gazing with admiration and pride on the vast proportions of the dome of the Capitol. He bestows his admiration, as thousands have done before him, on a great and lasting monument of architectural skill.

In a distant part of our city, scarcely to be noticed by the stranger and almost unknown to many a Washingtonian, are the twin domes of the nation's Astronomical Observatory. No stupendous piles of architecture meet the eye of the visitor here, but hid in modest seclusion beneath the larger dome is the monster telescope. For thirty years the Observatory has contented itself with the use of an equatorial instrument of puny dimensions, such as many an amateur possesses. Congress, with its accustomed munificence in its contributions to science, some years since appropriated $50,000 for the construction of a telescope which should be a true representative of the present high state of advancement in the manufacture of such instruments, and a powerful agent in astronomical research. The construction, which was undertaken some years since, has been successfully completed, and the telescope now is being mounted at the Observatory in Washington, and will soon be actively employed in the nightly vigils of the astronomer.

Our own countrymen, the Clarks of Cambridge, Mass., who constructed the instrument, carry the laurels of being the most successful optical artists in the world. From the smallest beginnings in telescope making they have made steady progress, till they have reached the present stage of excellence. This instrument is of American manufacture. The only foreign element in its construction is the optical glass in the lenses. Optical glass is only to be obtained by importation from abroad. The different parts of the instrument are so finely proportioned that its immensity is lost sight of, and the visitor on first acquaintance might not give full credit to its vast dimensions. The protecting building is circular in form, and about 40 feet in diameter, and is surmounted by a dome of the same diameter, resting on a circular system of wheels so that it may be readily revolved through the whole or part of a circle. The dome is provided with a slit six feet in width from the horizon to a little beyond the zenith; this is protected by a sliding shutter.

The telescope is equatorially mounted, that is, it has two axes of motion at right angles to each other, one of which is parallel to the earth's axis, consequently the telescope may be made to follow the diurnal movement of a heavenly body by revolving it on this latter axis alone, which is commonly called the polar axis, because it is directed toward the pole of the heavens. The instrument rests on a pier of stone and brick work whose foundations are 18 feet below the surface. The pier is capped by a single block of sandstone weighing about two tons. On this stone rests a heavy iron casting some seven feet in hight and weighing one and a quarter tons, which supports the entire instrument. The weight of the moving parts is about four tons. The facility with which this immense mass can be moved is certainly surprising. The gentle pressure of the hand is altogether sufficient. The center about which the parts of the instrument move is about 17 feet above the floor. The telescope tube is of sheet steel riveted together like the funnel of a steamboat. It is somewhat cigar-shaped. The length of the instrument is 32½ feet. When it is pointed directly overhead the object glass is elevated 35 feet above the floor.

However wonderful the parts of the mounting may be, the greatest interest will always center in the giant eye of the monster. When it is said that this measures in available diameter 26 inches, it conveys to few an adequate conception of the patience and skill of the glass founder, and his oft-repeated failures before he produced disks without a flaw, or of the vast experience and effort bestowed on the disks by the optician in bringing them to an absolutely perfect figure.

The standard of purity and uniformity of density in optical glass is so very high that the manufacture is limited in Europe to very few establishments. Messrs. Chance & Co. of Birmingham, England, furnish the Clarks with most of their optical glass. The difficulty of fabricating large disks of optical glass increases very rapidly with their size; consequently large disks command a very high price. Thus, while the disks for the lens of the 18½-inch glass of the Dearborn Observatory, Chicago, cost $2,000, those for the 26-inch glass at Washington cost $7,000. The object glass of every achromatic telescope consists of two lenses, one of flint and the other of crown glass; the beam of light transmitted through them produces a colorless image at the focus.

The instrument is furnished with finely graduated declination and hour circles. For reading the circles, the divisions under the reading microscope are illuminated by passing a powerful current of electricity through a small platinum wire, which is thereby raised to a white heat. The two microscopes for reading the declination circle are so situated that they may be read by the observer while at the eye-piece of the telescope.

The pier of the instrument contains an archway, in which is mounted the clock-work which moves the telescope, so that an object may be held in the field of view as long as may be desired. The motive power is a reaction wheel, driven by aqueduct water at the rate of three turns in a second. The regulating apparatus is a conical pendulum, revolving once in two seconds, which is automatically controlled by an electro-magnet, which permits friction on a revolving disk when the velocity is too great, and removes it when it is too small.

The question is often asked, How much does this telescope magnify, or how much more does one telescope magnify than another? Such questions can never be answered in the sense in which they are asked, because the magnifying power of a telescope is not a certain fixed quantity. The magnifying power depends on the ratio between the focal length of the object glass and eye-piece. Telescopes of any considerable size are always furnished with a variety of eye-pieces. The size and perfection of the object glass of a telescope determine its power. A large object glass affords a great amount of light, and renders the effect of atmospheric disturbances less troublesome to the observer, and thereby enables him to examine objects with greater facility with the same magnifying power.

There is plenty of work to be done with this powerful implement of discovery. The astronomer has no need to shed tears as did Alexander the Great, because there are no worlds to conquer.